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Published in:
Journal of Rural Studies

DOI:
[10.1016/j.jrurstud.2016.06.004](https://doi.org/10.1016/j.jrurstud.2016.06.004)

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version
Final author's version (accepted by publisher, after peer review)

Publication date:
2017

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):

Meijering, L., Lettinga, A. T., Nanninga, C. S., & Milligan, C. (2017). Interpreting therapeutic landscape experiences through rural stroke survivors' biographies of disruption and flow. *Journal of Rural Studies*, 51, 275-283. <https://doi.org/10.1016/j.jrurstud.2016.06.004>

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Title: Interpreting therapeutic landscape experiences through rural stroke survivors' biographies of disruption and flow

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DOI: <http://dx.doi.org/10.1016/j.jrurstud.2016.06.004>

Received Date: 8 July 2015

Revised Date: 2 June 2016

Accepted Date: 3 June 2016

Available online 11 June 2016

Please cite this article as: Meijering, L., Lettinga, A. T., Nanninga, C. S., & Milligan, C. (2017). Interpreting therapeutic landscape experiences through rural stroke survivors' biographies of disruption and flow. *Journal of Rural Studies*, 51, 275–283.
<http://doi.org/10.1016/j.jrurstud.2016.06.004>

Keywords

- Therapeutic landscape
- Stroke survivors
- Biographical disruption and biographical flow
- Qualitative methods
- Rural areas
- The Netherlands

Highlights

- Bio-geo-graphical disruption and flow reflect the spatio-temporal dimension.
- Time and place effect rural stroke survivors' therapeutic landscape experiences.
- Stroke survivors struggle to move and live in 'ableist' rural spaces.

Interpreting therapeutic landscape experiences through rural stroke survivors' biographies of disruption and flow

Abstract

This article utilizes the concepts of biographical disruption and biographical flow to expand understandings of how a therapeutic engagement with the rural landscape may change over time for individual stroke survivors. In doing so, it explores how the rural landscape can be experienced as both a therapeutic and a non-therapeutic landscape. The paper draws on in-depth interviews with nineteen stroke survivors living in rural areas in the Northern Netherlands. Because of the cognitively and physically disabling changes that can occur as a result of stroke, interviewees' stories revealed complex and often contradictory experiences of the rural, post-stroke, that varied significantly from their pre-stroke experiences. Our findings demonstrate that the rural holds potential to function as a therapeutic landscape for stroke survivors, especially through its enabling natural and social characteristics. However, the different physical, social, natural, and healthcare aspects of the rural can also disrupt stroke survivors' individual biographies and their sense of self. The privileging of place in these biographies may provide important insights that can help improve the practice of stroke care. It also leads us to conclude that the concepts of biographical flow and disruption, though useful, need to take into account the influence of the wider (spatial) context. We thus coin the terms bio-geo-graphical flow and bio-geo-graphical disruption and suggest that these may more accurately reflect the spatiotemporal disruptions and flows experienced by stroke survivors in the post-stroke period.

Keywords: Therapeutic landscape Stroke survivors, Biographical disruption and biographical. flow. Qualitative methods, Rural areas, The Netherlands

1. Therapeutic landscapes

The natural environment has often been framed as health promoting, especially for people who experience physical or mental ill-health (Hartig and Staats, 2006; Kaplan, 1995; Ulrich, 1984). One way in which researchers have sought to understand the inter-relationships between people, place and health is through the concept of therapeutic landscapes. First posited by Gesler (1992: 743) the concept focuses on “how the healing process works itself out in places (or situations, locales, settings and milieus)”. Since Gesler’s (1992) initial work, numerous geographers, particularly those working in the sub-disciplinary field of health, have drawn on his ideas to tease out the therapeutic effects of a wide range of landscapes from landscapes that are highly individual and unique to those that are more ubiquitous such as built and urban landscape (e.g. Curtis et al., 2013; Masuda and Crabtree, 2010; Williams, 2010). Importantly for this article, significant weight has been attached to understanding the potential healing, or health enhancement effects, of the natural landscape. A growing body of knowledge within both health geography and environmental psychology highlights the positive and restorative effects of being in, or engaging with, the natural environment. Work here, for example, has considered the relational health effects of natural landscapes with varying groups of people ranging from: young adults; older people; those seeking respite; the terminally ill; those in recovery from either mental or physical ill-health; and family care-givers (e.g. Conradson, 2005; Hartig and Staats, 2006; Kaplan, 1995; Milligan et al., 2004; Moore et al., 2013; Ulrich, 1983, 1984; Willis, 2009; Wood et al., 2013). Research in this field points to a range of health promotion and wellbeing benefits from engagement with natural and healing environments including: an increased sense of belonging and purpose (Williams, 2002); the moderation of stress and anxiety (Korpela et al., 2008); increased social interaction and the promotion of social capital (Carpiano, 2006; Cattell et al., 2008); and the instigation of social and environmental interventions designed to promote and support healthy behaviors (Milligan et al., 2004, 2015). In a review of this broad range of literature, Duff (2012) noted that one of its most

salient themes is that there is a need to further understand the social, affective and material resources of enabling places that contribute to the promotion of wellbeing.

The therapeutic landscapes literature has also drawn attention to the diverse ways in which different people can experience the same landscapes. Hence, what may prove a therapeutic or salutogenic experience for one individual, can give rise to anxiety, uncertainty or fear in others (Milligan and Bingley, 2007). The emphasis here, however, has been on differences in experiences between individuals, highlighting how some places can both ‘hurt’ and ‘heal’ at the same time (Wakefield and McMullan, 2005: 300). Willis (2009) also raised the important question of whether the therapeutic landscape is experienced as palliative (i.e. where therapeutic benefits are experienced only when in or on the landscape but not beyond), or whether there are longer-term healing or health enhancement effects. What is largely absent in the literature then, is an understanding of the temporal dimension of therapeutic landscape effects; that is, how the relational and the therapeutic engagement with landscape can change for the individual at different points in their lives.

2. Stroke and disability

In this article, we address the biographical stories of enabling and disabling aspects of the rural environment by drawing on the specific experiences of stroke survivors living in rural areas in the Netherlands. A stroke is a sudden death of brain cells due to a lack of oxygen, caused by blockage of blood flow, or by rupture of an artery to the brain. Most stroke survivors continue their lives with lasting physical, cognitive and/or emotional impairments which can include paralysis, loss of balance, and coordination, loss of concentration, memory, understanding, speech, and reading and writing skills (BHF, 2014). Such lasting impairments are likely to change the ways in which stroke survivors perceive and engage with their environment.

In the Netherlands, 6.1% of people aged 50 and over experience a stroke and survive (CBS, 2014); many of these survivors live in rural areas. Following a stroke, most are admitted to an acute stroke unit in hospital. They are then either discharged back to their own home, sent to a specialized stroke rehabilitation unit, or relocated to a nursing home. The place to which they are discharged depends on the impact of the stroke on the individual, their age and their prospects for recovery. Our study focused on stroke survivors with moderate to severe disabilities who worked on their recovery in a rehabilitation stroke unit before being discharged to their home. Within the rehabilitation stroke unit, survivors work on their recovery with the support of a specialized multi-disciplinary team of physiatrists, physical therapists, occupational therapists, nutritionists, speech therapists, psychologists, social workers, and nursing staff.

When studying disability in rehabilitation medicine, the International Classification of Functioning, Disability and Health (ICF) is widely used, as it provides a coherent view of health from a biological, individual and social perspective (Stucki et al., 2002). Although the ICF stresses environmental and personal factors of health and disability, rehabilitation medicine tends to neglect the spatial and social environment as well as changes over the individual life course (Cott et al., 2007; Jansma et al., 2010). Since the 1990s, the social model of disability has increasingly gained traction. This model places less emphasis on disability as a medical condition and more on exclusionary societal practices that act to disable. First coined by the disabled activist and writer Mike Oliver (1983), the social model has been widely adopted by critical geographers and is the framing of disability we utilize for this paper. Following Chouinard (2010: 242), we define the social model of disability as “the embodied process of becoming disabled through experiences of physical or mental impairment or illness and the negotiation of relations and practices that value able bodies and minds at the expense of others”. This approach helps us to look at disability as constructed through societal exclusionary practices.

100 The stroke literature notes how impairments following stroke can impact adversely on an
101 individual's life course, disrupting and inhibiting the continuance of their 'normal' life as
102 experienced prior to the onset of the illness (Cott et al., 2007; Nanninga et al., 2015a). Bury
103 (1982) defined this experience as one of 'bio- graphical disruption'. He maintained that we
104 can learn much about everyday situations and experiences through analysing the
105 circumstances in which disruption occurs. His work identifies three key features that underpin
106 biographical disruption. Firstly, he points to disruption of the taken for granted assumptions
107 and behaviors that previously characterized an individual's daily life. Attention here focuses
108 on embodied states not previously brought into consciousness and how these are addressed.
109 Secondly, he identifies a disruption of the individual's biography and their sense of self.
110 Thirdly, he refers to the coping mechanisms mobilized in response to the altered state arising
111 from the disruption. Importantly, biographical disruption is not viewed solely as impacting on
112 the individual experiencing the stroke, but also on families and members of a stroke survivor's
113 wider social networks. In the immediate post-stroke period, survivors are likely to focus on
114 their functional impairments, and on recovering from these. In the longer term, where some
115 impairments prove to be enduring, individuals may identify as being chronically ill and/or
116 disabled (see Cott et al., 2007; Nanninga et al., 2015a).

117 Despite being widely accepted and having come to form something of a 'grand narrative' of
118 stroke, Faircloth et al. (2004) maintain that the concept of biographical disruption may be too
119 simplistic. Where illness is marked by sudden onset e as in stroke e they argue that lives are
120 not inevitably disrupted, especially where different symbolic significance may be attached to
121 the experience. So while some individuals may indeed find their lives disrupted as a result of
122 a stroke, others may view having a stroke simply as part of their ongoing life narrative, that
123 is, as a different stage of their life embodiment. In this respect stroke survivors will in maintain

a coherent sense of the pre- and post-stroke self. In their critique of the notion of biographical disruption Faircloth et al. (2004) draw attention to the intersectionality of stroke with the ageing process, co-morbidity, or pre-existing knowledge of the stroke. They posit that these overlaps may result in what they refer to as 'biographical flow' in the experiences of a person pre- and post-stroke (p. 242). Adding further complexity to the literature is a study of identity changes following stroke undertaken by Kuenemund et al. (2016). In this research the authors found evidence of personal growth following the trauma of stroke and argued that it would be worthwhile to also consider positive changes post-stroke.

Whilst we accept the argument that biographical disruption is not inevitable, it nevertheless offers a useful lens through which to interpret and to understand how people experience their pre- and post-stroke body physically, cognitively, and emotionally. The concepts of biographical flow and disruption also highlight the importance of understanding the temporal dimensions surrounding the disabling conditions of a stroke. While much of the argument about disruption and flow is cast in temporal terms, the specific focus of this article is on how the spatial, in all its manifestations, such as place, environment and landscape, enters into the story. Therefore, our paper seeks to expand understandings of how a therapeutic engagement with the rural landscape may change over time for individual stroke survivors.

4. Understanding rurality in the Dutch context

Our study was conducted in the rural environment of the Northern Netherlands. Our interpretation of rurality draws on Woods' (2012: 3) definition of: "how rural spatial and social relations are constructed, represented, materialized, performed and contested". The rural is a place where aspects of what is commonly regarded as 'natural' in terms of for instance vegetation, animals, rivers, and slopes, are more obviously present. We recognize, of course, that, in most areas these features of rurality are rarely entirely 'natural' but rather are the product of centuries of interventions from factors such as human occupation and

agricultural production. In this article, we focus on the ‘everyday lives of the rural’ which has been identified as one of the key facets of rurality (Halfacree, 2006: 51). The rural setting is appropriate, since it contains a variety of spatial characteristics that, in one way or another, appear to be deepen biographical disruptions or facilitate biographical flows in the lives of stroke survivors.

When studying the potentially therapeutic nature of the rural environment, it is important to acknowledge that what is ‘rural’ and what the rural landscape looks like differs significantly between different countries. The Netherlands is a largely urbanized country, with very high population densities, averaging 498 people per square kilometer. In comparison, the population density of Belgium is 369; the United Kingdom 265; and Sweden 23 (World Bank, 2013). Even the environment that is classified as rural in the Netherlands can be relatively densely populated, with areas being designated as rural if they have an address density of fewer than 500 people per square kilometer¹ (CBS, 2015). Importantly, 99.6 percent of rural dwellers in the Netherlands are still able to reach a first aid post in a hospital within a 30 min drive and 53.7 percent are able to reach a hospital within a 10 min drive (RIVM, 2014). This means that even for those areas defined as rural, acute care is never really that far away.

However, in a broader context dominated by neoliberal imperatives, health care services (particularly in rural areas) are typically being reduced and concentrated (Chouinard and Crooks, 2008; England et al., 2007). In the Dutch context, austerity measures and cutbacks have led to a concentration of health services in areas of higher population density, resulting in the demise of local village-based services (RIVM, 2014; Gijzen and Poos, 2013). In their stead, healthcare providers, such as general practitioners, physio- therapists, dentists, psychologists, social workers, occupational therapists, as well as surgeons undertaking minor operations previously carried out their duties in local hospitals. However, today they are typically concentrated in larger regional centers. Financial cutbacks are also placing pressure

on rehabilitation centers to shorten the duration of expensive in-patient rehabilitation services. The focus is on delivering post discharge care and treatment at home, by a specialized team, as early as possible (see, for example, Mas and Inzitari, 2015; Nanninga et al., 2015b). Although these services are potentially enabling for rural dwellers who require them, service concentration is based on the premise that rural dwellers can secure access to them (see Goins et al., 2005).

Understanding how service concentration is impacting on the lives of rural stroke survivors may be an important aspect of their spatial experience post-stroke.

5. Methodology

This article is part of a larger qualitative study on stroke survivors' experiences of the transition from the rehabilitation unit to the home-setting. Our methodology is informed by approaches to the geographies of disability (Chouinard, 2010; Imrie and Edwards, 2007). That is, we undertook qualitative in-depth interviews designed to give voice to stroke survivors, to understand their experiences over time, and to increase insight into the diversity of their experiences.

The sample of participants for the larger study included stroke survivors living in both urban and rural areas. However, given the neo-liberal imperatives discussed above, we were particularly interested in the experiences of rural dwelling stroke survivors. Hence, in this article, we draw specifically on data collected with those stroke survivors who were living in rural areas in the North of the Netherlands pre-stroke. The data are drawn from semi-structured in-depth interviews with 19 stroke survivors, collected in two separate phases. In the first phase (2010e2011), thirteen participants (1e13, Table 1) were approached as a follow-up after they had completed a survey and indicated they were willing to participate in

an in-depth interview. Subsequently, in 2011 and 2012, six participants (14e19, Table 1) were interviewed twice, once in the rehabilitation unit and once at home. Participants were recruited by the third author, who was working as a physiotherapist at the stroke rehabilitation unit at the time. All in-depth interviews were conducted at a time and location that was convenient for the participants, and in the presence of a 'significant other' such as a partner or a sibling. During the interviews, the participants were asked to reflect on their current bodies and (expectations about) their lives in the rehabilitation unit, at home and in the community, and to comment on differences in their daily lives pre- and post- stroke. Overall, the interview guides in both phases covered the same questions; however, our learning experiences and the inductive inferences emerging from the first set of interviews were used to refine the questions in the second set of interviews and opened new paths of inquiry.

All interviewees underwent multidisciplinary treatment in the same rehabilitation stroke unit for at least one month, and all returned home afterwards. Since we recruited participants through the rehabilitation unit, our sample consists of participants who had suffered a moderate to severe stroke and were relatively young. Older and fragile stroke survivors more often undertake rehabilitation in a nursing home setting, and survivors of a light stroke are typically discharged home following hospital admission.

All participants were informed about the aims of the study, signed a consent form, and participated voluntarily. Following Dutch ethical review processes, the study was submitted to the Medical Ethical Review Committee of the University Medical Center Groningen. It was exempted from review, which means that the Committee did not identify any ethical problems with the research. The in-depth interviews were digitally recorded, transcribed verbatim, coded and analyzed using Atlas-ti, a software package for qualitative data analysis. Coding and analysis were carried out by the first author and reflected on by the second and

last authors. In our analysis, we focused on how the social and material components of the rural landscape created different therapeutic encounters pre- and post-stroke, identifying patterns of bio- graphical flow and disruption. Our approach to the data analysis was both deductive and inductive, enhancing the depth of our analysis (see Thornberg, 2012).

Table 1

Participant pseudonyms and characteristics.

No	Name	Age	Stroke effects ^a	Education ^b	Employment status	Marital status	Time since stroke onset (months) ^c	Biographical flow/disruption ^d
1	John	57	Motor and cognitive	Vocational	Incapacitated	Single	10	D
2	Paul	50	Motor	Unknown	Working	Single	17	F
3 ^e	Simon	41	Motor and behavioural, mood, swallowing	Higher	Incapacitated	Single	60	D
4	Tom	60	Motor, cognitive and speech	Vocational	Incapacitated	Married	47	D
5	Caren	60	Motor and cognitive	Higher	Partly incapacitated, partly working	Single	25	D
6	Sam	40	Cognitive, mood, speech, sight and epilepsy	Vocational	Incapacitated	Cohabiting	23	F
7	Nina	47	Motor, cognitive and sight	Vocational	Incapacitated	Married	17	F
8	Violet	42	Motor and cognitive	Lower	Incapacitated	Cohabiting	23	D
9	James	58	Cognitive and behavioural	Vocational	Incapacitated	Married	7	F
10	Victor	71	Motor and speech	Vocational	Pensioner	Married	19	F
11	Rose	53	Motor and cognitive	Vocational	Unemployed	Married	33	D
12	Laura	49	Motor and cognitive	Lower	Pensioner	Married	21	D
13 ^e	Isa	48	Motor and cognitive	Vocational	Incapacitated	Single	78	F
14	Kate	61	Motor	Lower	Unemployed	Married	8	F
15	Henry	69	Motor	Higher	Pensioner	Married	6	D
16	Raymond	68	Motor	Higher	Pensioner	Married	6	D

17	Roy	66	Cognitive	Vocational	Pensioner	Single	6	F
18 ^e	Peter	46	Motor and behavioural	Vocational	Incapacitated	Married	6	F
19	Ron	63	Motor and cognitive	Higher	Pensioner	Married	6	F

^a The listed stroke effects were recorded by the rehabilitation clinicians, and these typically coincided with the stories that were discussed during the interviews.

^b Levels of education: lower e finishing secondary school but no further education; vocational e for example tradesman, care worker; higher e technical college/university educated.

^c For the participants who were interviewed in round 2, we recorded the time post-stroke at the time of the second interview.

^d Based on text analysis, we determined whether the story of each participant was dominated by narratives of biographical disruption or flow. This does not mean that participants experiencing flow did not recount any experiences of disruption, and vice versa.

^e Used to live in a rural area pre-stroke, and moved to an urban area post-stroke.

6. Disruption and flow in rural therapeutic landscape experiences

6.1 Differences between participants

Participant characteristics are summarized in Table 1. In our analysis we explored patterns of biographical flow and disruption in the stories of different subgroups of participants. Our analysis did not reveal any significant variations in patterns of disruption and flow arising from differing impairments following the stroke; marital; or employment status. Furthermore, while we had anticipated that age might impact significantly on an individual's experience of disruption and flow (e.g. with greater evidence of flow in later life), the data did not support this expectation. Interestingly, this runs counter to what some of the existing biographical disruption literature tells us. Our data suggest that it is perhaps too simplistic to assume that greater biographical disruption will be experienced at younger age. This is consistent with Faircloth et al.'s (2005) findings, that narratives of

stroke onset can be characterized by both disruption and flow irrespective of age. For example, for working age stroke survivors, biographical disruption may be experienced in relation to employment. At the same time our data reveals that older stroke survivors can also experience significant biographical disruption to their lives, for instance with regard to hobbies or other forms of social engagement.

Furthermore, when looking at time since the onset of a stroke, we found that narratives of disruption dominated the stories of participants who had experienced a stroke more than 24 months prior to the interview. This suggests that disruption is likely to remain dominant within stroke survivors' narratives over time. When considering differences in education, our findings indicated that people with vocational training seemed to cope with the stroke effects relatively well; this may be related to their ability to create practical solutions to everyday problems. Another difference between subgroups was that both married and single men experienced rather more biographical flow than women. For some male participants, this may be linked to their vocational training. We acknowledge that the claims made in the section above are tentative, given the relatively small number of participants.

6.2 Disruption and flow in interactions with things and people in rural space

Pre-stroke, most of our participants enjoyed engaging with the rural landscape but gave little thought to either the enabling or the potentially disabling aspects of the environment. Faced with a post-stroke body, however, many noted how elements of the physical environment that had previously been negotiated with ease, were now experienced as disabling. Participants revealed how, rather than engaging with, and enjoying the wider rural landscape (e.g. the natural scenery, wildlife), they now found themselves focusing closely on immediate material objects that had become obstacles to their negotiation of the natural environment. This resulted in experiences of biographical disruption. Victor, for example, explained how he used to enjoy walking or cycling in

274 the rural landscape before his stroke, and had never considered the potential material difficulties
275 involved in moving through this landscape:

276 You are never going to be as secure as you were [before the stroke]. I do cycle well, but I have to go
277 through a tunnel at first, and it's very difficult for me to get up [the slope]. So, this hinders me [in going
278 out]. (Victor)

279 The northern Netherlands is a region that is mostly flat and has no steep hills. Thus, Victor's
280 comment highlights how even relatively minor topographical features can present challenges for
281 the post-stroke body and result in experiences of biographical disruption. A sloping tunnel that
282 facilitated the opening up of the rural landscape in his pre-stroke life, had become a barrier to
283 outdoor activities post-stroke. Sam's experiences revealed another challenge of cycling, namely
284 that of dealing with other traffic participants. Sam ran a nursery garden with his family, and his
285 home and business were located outside a village, in a very quiet rural environment. The quiet
286 traffic situation, together with problems he now experienced with his eyesight, heightened his
287 sense of other traffic participants as 'obstacles':

288 At first I would cycle and there would be another cyclist coming my way, and I would not see him
289 coming. And when he would be cycling right next to me, and say "hi", I was scared out of my wits,
290 because I would have missed him completely. And now, with a certain way of observing, my eyes
291 to the left and to the right, it's going well. (Sam)

292 Sam's narrative reveals how he developed a technique to manage the challenges of bicycling post-
293 stroke, and participating in traffic situations in particular. He took great pride and pleasure in the fact
294 that he could once again take his five-year-old son on bi-cycle tours through the rural landscape, which
295 strengthened their bond. This demonstrates how material objects and aspects of the environment are
296 connected to the social landscape. Furthermore, Sam's experiences show how he had developed a
297 technique that enabled him to manage his post-stroke body in a way that demonstrates a shift toward
298 biographical flow.

299 Physical elements of the seasons can also hinder stroke survivors' engagement with the natural
300 environment. These experiences can illuminate the psycho-emotional dimensions of disability which
301 pertain to internalized oppression and negative stereotypes of disability in society (Reeve, 2002).
302 Laura, for example, expressed frustration that her hemiplegic body left her unable to walk out- doors
303 in the winter time, because bad weather made the landscape slippery to negotiate, resulting in a
304 decline of her physical condition. Even when it was not slippery outside, she had to concentrate on her
305 right leg when walking outdoors:

306 When there's no snow, I go out for a walk, to the shopping mall, or to visit my mother. [...]. When it is
307 slippery, [my partner] does not allow me to go outdoors. [I'm afraid to fall]. It's not nice, that stupid
308 right side [of my body]. I keep dragging [my right leg]. [...] And even when I focus on my right side,
309 when I walk past a wall I stumble into it.

310 I: Does it become worse when you're tired?

311 L: That's for sure. (Laura)

312 For Laura, as well as other participants, the change in their embodied state post-stroke
313 rendered artefacts in the rural environment more challenging and the rural space less
314 accessible. Previously taken-for-granted features of the physical landscape were problematic
315 for the post-stroke body. This changed the nature of their experience and shifted their
316 engagement with the rural landscape from one that focused on enjoyment and engagement,
317 to one that was heavily focused on negotiation and the negative emotions associated with
318 highly circumscribed bodily movement ("that stupid right side").

319 While not specifically a rural issue, what became clear was that the post-stroke body can find
320 previously accessible landscapes disabling. Material objects such as slopes, walls, and tiles
321 become obstacles to any therapeutic encounter with the landscape. This was especially
322 challenging for our participants since they had not perceived these things to be disabling pre-

stroke. This reflects the literature on disabling environments and 'ableist spaces', which illustrates how environments are often designed without taking into account the needs and experiences of people with disabilities (Chouinard, 2006; Crooks et al., 2008a; Imrie and Edwards, 2007; Rattray, 2013).

When looking at how stroke survivors interact with other people in the rural landscape, our participants revealed how their social needs and abilities had changed. In particular, they noted that they felt a continuous need to belong and to be recognized. How this was achieved tended to differ for participants pre-and post- stroke. Pre-stroke, our participants would engage with other villagers in casual conversation, for instance when meeting them in the street or at the local shops. Post-stroke, participants revealed how they tended to avoid potentially difficult social encounters by engaging with people from a distance. Laura, for instance, noted that she would go out with the specific aim of waving at some family members and friends. It gave her a good feeling to go out with a particular purpose rather than "just walking around aimlessly" as she described it.

L: [When going for a walk,] there are a couple of places, where I have to check, I have to wave. And, well I walk up until [partner's workplace] and I check whether he's there and I wave at him. Yes, that's nice, but that's not just going for a walk, there's [a social purpose]. (Laura)

By engaging in social interaction from a distance with, in this case, her partner, Laura illustrated how she had developed a strategy that helped her to feel socially included and part of the community, thus achieving a sense of biographical flow. It seemed that for her, as well as for some other participants, direct conversation with other people could be demanding and hence something to be avoided where possible. This was most evident where oral communication skills and/or information processing abilities were impaired. The social landscape of rural village dwelling, we suggest, can offer a relatively quiet and unthreatening social space, that can provide opportunities for stroke survivors to engage in social interaction from a distance; in doing so it enables them to feel acknowledged and included without the pressure of close physical engagement. These findings reinforce Jones and Curtin's (2010)

Australian study on rural-dwelling survivors of a Traumatic Brain Injury (TBI), where the rural, offering a potentially quiet social environment, was found to actually suit participants. These findings reinforce the notion of the rural as an enabling social space (Walsh and O'Shea, 2008), as well afford support to the claim that informal practices in rural communities can help to reduce experiences of social exclusion (Walsh et al., 2014). However, we acknowledge that the rural can also be a space of social exclusion. Parr et al. (2004), in her study with people with mental health problems in the UK, for example, noted that the social environment in rural areas can be characterized by both social inclusion and social exclusion. The rural social environment, they maintained, can sometimes be experienced as an unnerving space, which can be difficult to 'navigate' in social terms, and where disabled bodies are stigmatized. Similarly, stroke survivors, can experience social exclusion based on a lack of understanding of their disabling conditions by others in their social environment (Crooks et al., 2008b; Nanninga et al., 2015a).

6.3 Disruption and flow in interactions with rural gardens and nature

When looking at participants' relationships with the rural landscape, stories encompassing complexity and change in therapeutic and disabling landscape experiences emerged. In the Netherlands, rural gardens are generally significantly larger than those situated in urban areas, and are one of the reasons why people choose to live in a rural area. Gardens thus form an important part of people's experiences of rural dwelling and green space, and are important to consider in the context of the rural experience of stroke. Many participants spoke of how, pre-stroke, they had enjoyed working in their gardens, but that this had changed. Take Henry's case:

H: I do mow the lawn. We have a sizeable piece of grassland, with these precise little corners that you have to do. The first time I did it [after the stroke], I did it in three turns. [...] It's still tiring, but I can do it now. And when I know, I'm going to mow the lawn, I don't do [another exercise]. But it's like, I walk in the garden, and I see all the stuff I'd like to do, but I can't get around to doing it yet. [...] It's my balance, when weeding, you have to get down and up again, it's tiring.

373 P: It's heavy work, gardening. [...]

374 H: I now do less in the garden, my wife is gardening more. (Henry and partner)

375 As a gardener, Henry experienced the garden in a different way pre-and post-stroke. On the one hand,
376 the things he can still do in his garden, such as mowing the lawn, give him a sense of achievement, so
377 contribute to his experience of the garden as a therapeutic place. On the other hand, his story is
378 illustrative of the frustration people can feel post-stroke, when they want to engage in an activity they
379 used to enjoy, but can no longer do so. This loss of place in Henry's case his interaction with the
380 flower beds can affect how participants feel about their garden. His story illustrates how the socio-
381 spatial disruptions experienced by the post-stroke body can change an individual's relationship with
382 those places from which people previously derived therapeutic enjoyment. Such findings run counter
383 to those discussed in Jones and Curtin's (2010) work, where stories of disruption such as recounted by
384 Henry, were largely absent. Rather, participants expressed a strong rural identity and found solace in
385 their attachment to a rural idyll, centered around a peaceful and quiet environment. Importantly, as
386 distinct from our study, Jones and Curtin's (2010) work presented a single 'in the moment' account
387 that did not attend to how the experiences of a stroke survivor may change over time.

388 Other participants in our study expressed experiences of disruption from a range of other rural
389 landscapes beyond the garden. In the Dutch context, a specific feature of the rural concerns coasts
390 and lakes. Simon's narrative, for example, revealed a sense of biographical disruption from his favorite
391 activity of sailing. He particularly enjoyed the challenge of curbing the natural environment of the sea.
392 Post-stroke his inability to continue sailing was manifested through a narrative of biographical
393 disruption:

394 I don't have any hobbies anymore, everything takes so much energy. And sailing, [my] sailing boat, I
395 sold it. I tried, but I can't do it anymore. It is difficult. And the most difficult thing for me was, the boat
396 was in [sea port on the Waddensea]. And normally we would go to [another port on the Waddensea]

397 to get an ice cream. My sister was here on Saturday, and she took me where I used to live, and I enjoyed
398 that, to the Waddensea. (Simon)

399 In returning to the sea shore, Simon sought to re-incorporate his therapeutic engagement with the
400 landscape through the sensory rather than the physical experience: watching the width of the sea from
401 the dyke, smelling the seaweed and eating an ice cream in the restaurant on the seafront. Laura, in
402 contrast, sought to re- incorporate a physical and therapeutic engagement with the canals and lakes
403 close to her home, but struggled to achieve this:

404 P: [Pre-stroke] we were always outdoors when we were free. L: Canoeing. [...]

405 P: She says she can't use the paddle anymore. And I tell her, what's the big deal. [...]

406 I: So, you don't enjoy the canoeing when you can't paddle? L: No, because I wouldn't do my job
407 properly.

408 P: I don't mind, as far as I'm concerned you could just sit and relax, maybe read a book or something.

409 L: And if I would have done that before I had the stroke, brought a book. He would have thrown me in
410 the water, figuratively speaking <laughs>. [...] You should paddle.

411 Laura's strong connection to canoeing was a key theme in her narrative. This was expressed both
412 through her dialogue and through her emotions. She indicated that while she wanted to enjoy the
413 therapeutic benefits of canoeing again, she had not come to terms with the alternative 'solution' to
414 participating in this activity. The notion of taking a less active role in the canoe and perhaps reading a
415 book or watching birds while still immersed in the quiet, natural environment was not palatable to
416 Laura. Her narrative reveals that in the absence of being able to undertake the repetitive movements
417 of paddling and engaging in the physicality of canoeing she felt out of control in the natural landscape.
418 A space and an activity undertaken in this space that were previously therapeutic were no longer
419 experienced as such. Whilst not the core focus of our paper, Simon and Laura's stories also highlight

420 the benefits of 'blue space' as therapeutic landscapes in that they may also provide physical and
421 emotional restoration (Korpela et al., 2010; Voelker and Kistemann, 2011, 2013).

422 Nina, who experienced a stroke as a complication with a hip surgery, revealed a more positive
423 narrative. She had struggled for years with a deteriorating ability to walk, especially since hiking used
424 to be a pre-arthritic hip and pre-stroke leisure activity that she and her family vastly enjoyed. Following
425 a hip replacement, Nina managed to regain her pre-stroke and pre-surgery physical condition, enabling
426 her to take up hiking again around the rural living environment proximate to where she lived. She
427 commented on how much this meant for her:

428 N: Walking is going really well, fantastic. I walk about ten kilometers per day, it's great.

429 I: You don't know what's happening to you. [laughter]

430 N: No, really. We say it to each other like ten times on the way, like this is so special, so special.

431 I: And no limitations?

432 N: No, really. That's the great thing, because I have not been able to do this for years. My mum lives in
433 the next village, more than four kilometers from here. And now, well the first time I did not walk all
434 the way to [my mum's village] of course. And the first time I did walk there, I had to rest on a bench
435 on the way. And now I walk there, just like that. And I even walk back. The first time you had to call
436 like, well I'm there, please come and pick me up. And now I walk back home, that's fantastic. And we
437 go on long walks in the forest, and we go everywhere, it's great. (Nina)

438 Nina's narrative is one of biographical flow, in which she was able to regain much of her former life
439 following a period of disruption resulting from her hip problems and stroke. After this period of
440 disruption, it might even be argued that she experienced a 'biographical peak'. By this we mean that
441 following a long period of physical disability, Nina's regaining an ability to walk significant distances
442 was experienced as particularly enabling.

6.4 Barriers in interacting with rural health care services

As well as being a material, social and natural environment, the rural landscape is also a setting in which stroke survivors have to negotiate and access services, including health care services. Our participants' experiences of accessing and using these services were often framed in terms of barriers which can be interpreted through the notion of biographical disruption. This was, in part, related to issues of transportation. In the case of stroke survivors, this is an important issue in the Netherlands as stroke survivors are, by default, banned from driving for at least six months post-stroke. Given that rural areas are generally not well-served by public transport, rural stroke survivors are often dependent on being driven by significant others or reliant on professional taxi drivers to take them to health care services that they are unable to reach by foot, bicycle or mobility scooter. Raymond, for instance, explained how he had become dependent on his wife, since being banned from driving:

R: Well, I used to be much more mobile, I had my driving license. I do still have it, but I am not allowed to drive for another three months. So that makes you dependent on others to drive you around.

P: One other person [laughs].

R: Dependent on your wife [laughs].

Stroke survivors' ability to drive pre-stroke was typically self-evident, meaning our participants were unlikely to have considered this a potential issue when able-bodied. However, the loss of a driving license in combination with the demise of some village-based services, underlined a challenging aspect of the rural environment.

One particular issue that some participants highlighted related to the time it took to get to health care services. James, for instance, had to travel three times a week for outpatient treatment:

On average, I go to [the rehabilitation center] three times a week. [...] I typically go on a Monday, Wednesday and Thursday. [...]

466 I: How long does it take you to get there?

467 J: By taxi, you mean? That's about 45 minutes [one-way].

468 Whilst transport by taxi would be covered by health insurance, a single journey by taxi to a healthcare
469 service can take up to one hour, as in James' case. Rural dwelling stroke survivors may thus find
470 themselves spending a significant part of their week on travelling to (and engaging in) outpatient
471 treatment.

472 As well as health care, other services, such as shops and trans- port were vital for enabling our
473 participants to continue living in a rural area. Some participants realized that they would be unable to
474 regain a sense of biographical flow in a rural setting, and had therefore decided to move away. Peter
475 described how the remote nature of his former rural home had compelled him and his partner to move
476 to an urban location. Although he had anticipated having to move into town in his later life (i.e. post-
477 retirement), the disabling experiences of the rural landscape post-stroke led him to advance this
478 decision:

479 These circumstances have sped up the process of moving [into town]. We used to live in the middle of
480 nowhere [sic] outside the village. There's no public transport in our village, while I am not reliant on
481 [public transport]. There are no shops [in our village], which is also very convenient now [in town].
482 Overall, this is better. (Peter)

483 Hence, rather than living in what Peter had come to experience as a disabling environment, he chose
484 to move to an area where he had easier access to shops and services. Peter's decision illustrates how
485 he reorganized his life so that his lived experience was not manifest in biographical disruption, but in
486 biographical flow. Again this narrative runs counter to that of other research on disability and rurality
487 that suggests that the attachment to the rural social and physical landscape, and the desire to preserve
488 a rural identity, outweigh restrictions in terms of access to services such as healthcare, shops and
489 public transport (Jones and Curtin, 2010).

7. Concluding comments: towards bio-geographical disruption and flow

Drawing on our work with rural-dwelling stroke survivors, we have explored how the biographical disruption and flow that occurs as a result of stroke impacts on the therapeutic experience of the person-landscape encounter in the Northern Netherlands. In particular, we have highlighted the importance of bringing together the dimensions of time and place in studying disabled people's everyday lives. More specifically, our findings demonstrate how material, social, natural and healthcare environments that have previously been experienced as enabling, easily negotiable and health enhancing may become disabling and non-therapeutic for the post-stroke body (and vice versa). Furthermore, they show how stroke survivors experience biographical flow in engaging with some natural and social rural places.

Within these narratives of stroke and stroke survival, the spatial relationship between the pre- and post-stroke body and the (rural) environment is crucial. We thus suggest that rather utilizing the terms 'biographical flow' and 'biographical disruption', we should instead engage the notions of 'bio-geo-graphical flow' and 'bio-geo- graphical disruption'. For us, the inclusion of the -geo-graphical perspective, focuses particular attention on the extent to which relational experiences of space/place are disrupted by changes in the life course arising from disability as well as and on how taken for granted embodied states have to be renegotiated at any other place anew. A bio-geo-graphical perspective thus has the potential to explain: 1) how the embodied experiences of places that were experienced as therapeutic pre-stroke, are renegotiated and can become ambiguous post-stroke; 2) how stroke survivors actively seek to (re)gain certain abilities that will enable them to access 'lost' and 'new' activities and places. This suggests that whilst some stroke survivors may initially experience bio-geo-graphical disruption, there is a determination to return to a position of bio- geo-graphical flow, or to create a renewed sense of bio-geo- graphical flow.

The concepts of bio-geo-graphical disruption and flow are not restricted to either rural areas, or to stroke survivors, since they engage with the interactions between people who become disabled and

places over time. At a more general level, the experiences of our disabled participants also illuminate how they sometimes struggled to move and live in spaces that are essentially 'ableist', reinforcing the critical work emerging from within disability geography ([Chouinard, 2006](#)). Our findings thus provide a compelling case for re-thinking the medical model which continues to dominate rehabilitation research and practice and instead working to enhance a more embodied and robust social model of disability.

In terms of therapeutic landscapes, we reflected on the limited engagement with the temporal nature of the therapeutic landscape encounter to date. Drawing on the concepts of *bio-geo-graphical* flow and *bio-geo-graphical* disruption, we suggest, provides a framework through which we can begin to understand the importance of time and life-course in shaping landscape experiences. Taking a temporal lens to the experiences of stroke survivors has enabled us to reveal how an individual's construction of a therapeutic landscape can and does, change over time. In the case of rural stroke survivors we have illustrated how the relational engagement with some rural environments can change from being therapeutic and enabling landscapes to ones that are disabling and filled with tension, and vice versa. We also suggest that questions about the palliative or longer-term healing effects of therapeutic landscapes ([Willis, 2009](#)) are complex, and need to be understood in relation to individualized experiences and contexts over time. However, the participants' stories also reinforced the importance of understanding the relational nature of therapeutic landscapes ([Conradson, 2005](#)), as the individual's relational experience of the physical and social landscape jostle against each other in ways that have the potential to cause a friction that did not occur pre-stroke. Nevertheless, our participants' stories reveal that despite the loss stroke survivors experience on all those domains, they may still experience and gain benefit from the beauty of the rural landscape (see [Price et al., 2012](#)).

Like all research, our study has limitations. Firstly, it did not set out to explore biographical flow and/or disruption and hence our interview themes were not specifically designed to elicit experiences of flow or disruption. Rather, these concepts emerged through our data-analysis. Secondly, we did not

attempt to achieve theoretical sampling or data-saturation for subgroups of rural stroke survivors, for example, by age, gender, education and ethnicity, as well as place of residence (urban-rural), place of origin and health status pre-stroke. Hence, we cannot draw definitive conclusions about differences between groups, though as we have indicated, some differences between groups of participants were evident and this warrants further exploration. Thirdly, in this study we were unable to follow up with participants whose stories were dominated by narratives of *bio-geo-graphical* disruption to see if, over time, they may have returned to a narrative of *bio-geo- graphical* flow (or vice versa). This too is deserving of further enquiry. Hence, in relation to the above limitations, we see considerable scope for further research e not just among different subgroups of stroke survivors, but also amongst people experiencing other types of chronic ill-health. Additional research has the potential to increase our understanding of how *bio-geo-graphical* flow and *bio-geo-graphical* disruption may be experienced by different groups of people, in different places with different acquired impairments. Finally, we acknowledge that using in-depth interviews meant that those whose speech and/or language were impaired, and who found it difficult to articulate their stories orally, were underrepresented in our study. Whilst efforts were made to include those who had difficulties expressing their stories through encouraging partners to help, we acknowledge that this strategy has limitations. For future studies, it may be useful to think of adopting visual and/or interactive methods, such as observation, mental mapping, photo elicitation, and walking interviews, to capture the perceptions and practices of people experiencing different impairments. Whilst our methodology enabled us to give voice to our participants, it might also be worth considering the ways in which co-production of this knowledge can be enhanced in the future (see [Chouinard, 2010](#)).

As we form an interdisciplinary team, comprising geographers, rehabilitation researchers and practitioners, the findings from our study have informed rehabilitation practice. For instance, a coaching program has been established for stroke survivors who have returned home. The purpose of the program is to support the home-making process at places where stroke-survivors wish to (inter)act, such as everyday rural landscapes. Further research is needed to improve the lives of stroke survivors

and will contribute to further exploring how re-embodiment for stroke survivors needs to be considered a life long project. This is of particular importance given stroke survivors need to re-engage with both familiar and non-familiar place in rural and urban landscapes. These places contain diverse human and non-human actors that need to be tackled consciously every day anew. Both stroke rehabilitation practice and research appear to have neglected this important aspect of stroke survivors' engagement with the landscape (Cott et al., 2007). Therefore, adding the prefix *geo* to the theoretical repertoire of the biographical disruption literature may help both rehabilitation practitioners and researchers to acknowledge the importance of place in stroke care.

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